

REMARKS

Reconsideration and allowance of the subject application are respectfully requested. Claims 1-24 are pending in the present application, claims 1, 9, and 19 being independent. Claims 1, 9, and 19 have been amended.

Prior Art Rejections

1. Rejection under 35 U.S.C. § 102 (b) based on *Allio*

Claims 1-4, 9-12, 15, 19, and 21 stand rejected under 35 U.S.C. §102(b) as being anticipated by *Allio* (U.S. Patent No. 5,808,599). This rejection is respectfully traversed.

Claim 1 is directed to an apparatus having a pixel array and first and second lenticular arrays. The pixel array includes "N" individual pixels each having subpixel elements. The first lenticular array focuses the light from a subpixel to a single spatial point between the pixel array and a viewer. The second lenticular array is positioned between the first lenticular array and a viewer.

Claim 9 is directed to an autostereoscopic display having a pixel array and first and second lenticular arrays. The second lenticular array is positioned between the first lenticular array and a viewer.

Claim 19 is directed to a method of displaying multidimensional images on an autostereoscopic display where images are generated using pixel arrays including pixel groups, projecting the images generated by each pixel

through a corresponding plurality of first lenses of a first lenticular array, thereby projecting the images through several first lens groups. The second lenticular array is positioned between the first lenticular array and a viewer.

The Examiner has alleged that Allio shows all the features of independent claims 1, 9, and 19 (Office Action, page 3). Applicants respectfully disagree. Claims 1, 9, and 19 contain two lenticular arrays. Applicants fail to see such a feature in Allio.

The Examiner states that Allio shows a first and second lenticular array and refers to Figure 1 (Office Action, page 3). However, the examiner has not particularized his rejection and identified any structure of the Figure or any passage of the reference that may be considered the first and second lenticular arrays. The examiner is reminded of the responsibility to particularize the rejection. For the reasons set forth below, it is respectfully submitted that there are not first and second lenticular arrays in the cited reference as asserted by the examiner. Since applicants have been unable to find this structure in Allio from the examiners action, if the examiner applies a new passage of the reference to support the asserted position, the examiner is requested to treat such a rejection as a new grounds of rejection.

Applicants direct the Examiner's attention to Figure 1a and a portion of the accompanying explanation of the figure in Allio (col. 3, ll. 55-62). Figure 1a shows three microlenses 10 used "instead of a single microlense[s]" (col. 3, ll. 60,61) 30 that is three times larger, but shown on the same figure (col. 3, ll. 60-62). Hence, Figure 1a fails to show two lenticular arrays used

concurrently but instead shows two alternative arrays that do not exist at the same time, effectively teaching away from use of two lenticular arrays. If the examiner continues to assert the position that Allio contemplates use of two lenticular arrays, applicants request the Examiner point out the specific passage in Allio.

For anticipation under 35 U.S.C. § 102 "A claim is anticipated only if each and every element as set forth in the claim is found, either expressly or inherently described, in a single prior art reference." Verdegaal Bros. v. Union Oil Co. of California 814 F.2d 628, 631, 2 U.S.P.Q.2d 1051, 1053 (Fed. Cir. 1987)(M.P.E.P. 2131). For reasons stated above applicants assert that all of the elements of claims 1, 9, and 19 fail to be set forth in the embodiment shown in Allio and, thus, Allio fails to anticipate claims 1, 9, and 19.

Applicant has already explained why Allio fails to teach or suggest the invention of independent claim 1, 9, and 19. Since claims 2-4, 10-12, 15, and 21 each depend, either directly or indirectly, from one of claim(s) 1, 9, and 19, claims 2-4, 10-12, 15, and 21 are allowable at least for the reasons generally expressed above with respect to claim(s) 1, 9, and 19.

In view of the above, Applicants respectfully request reconsideration and withdrawal of the outstanding rejection under 35 U.S.C. § 102 based on Allio.

2. Rejection under 35 U.S.C. § 103 (a) based on Allio

Claims 5, 8, 18, and 24 stand rejected under 35 U.S.C. § 103(a) as

being unpatentable over Allio. This rejection is respectfully traversed.

To establish a *prima facie* case obviousness (35 U.S.C. § 103), the Examiner has the burden of meeting the following three basic criteria: (1) the prior art must teach or suggest all of the claim limitations; (2) there must be a reasonable expectation of success; and (3) there must be some suggestion or motivation, either in the art or knowledge generally available to one of ordinary skill in the art to modify the reference or to combine teachings (M.P.E.P. § 2143)(emphasis added). Applicants respectfully submit that the Examiner has not satisfied the *prima facie* requirement of showing a teaching or suggesting of all of the claimed limitations defined by independent claims, 1, 9, and 19, for the reasons discussed above.

Applicants have already explained why Allio fails to teach, show, or suggest the elements of independent claims 1, 9, and 19. Since claims 5, 8, 18, and 24 each depend, either directly or indirectly, from one of claim(s) 1, 9, and 19, claims 5, 8, 18, and 24 are allowable at least for the reasons generally expressed above with respect to claim(s) 1, 9, and 19.

In view of the above, Applicants respectfully request reconsideration and withdrawal of the outstanding rejection of claims 5, 8, 18, and 24 under 35 U.S.C § 103(a).

3. Rejection under 35 U.S.C. § 103 (a) based on Allio in view of Sumida

Claims 16-17 and 22-23 stand rejected under 35 U.S.C. § 103(a) as being unpatentable over Allio in view of Sumida et al. (Patent No. 5,956,001).

This rejection is respectfully traversed.

As set forth on page 4 of the Office Action, the Examiner relies on Sumida to teach all the incremental features of claims 16-17 and 22-23. Applicants submit, however, that the Office Action fails to make a *prima facie* showing that Sumida renders dependent claims 16-17 and 22-23 unpatentable.

The Examiner states on page 4 of the Office Action that Allio lacks disclosure of an offset distance, which increases from the center of the autostereoscopic display. The Examiner alleges that Sumida teaches such an offset for the benefit of preventing moiré fringes (Sumida, col. 35, ll. 52-64; Figure 22)

Claims 16-17 and 22-23 are directed toward an apparatus (claims 16-17) and a method (claims 22-23) directed to the displaying of multidimensional images where offset distances of lenses and/or lenticular array spacing are specified with respect to two lenticular arrays. As discussed above Allio fails to disclose the use of two lenticular arrays.

In addition, Sumida fails to disclose the offset distances or the particular lenslet spacing for two lenticular arrays. Sumida discusses the pitch P1 of microlenses in a common plane and the pitch of the associated pixel pitch of the display panel. Sumida states at column 35, lines 53-65:

“Alternatively, the image display device of the present invention prevents the generation of more [sic.] stripes due to the parallax between the pixel pitch and the particular optical element employed, by prescribing the pitch P1 of the micro lenses or the

light shielding layers at a value expressed by $P1 = P \cdot L / (L + d)$, where P denotes the pixel pitch of the display panel; L denotes the distance between the plane bearing the microlenses or the light shielding layers and the viewer; and d denotes the distance between the plane bearing the pixels of the display device and the plane bearing the micro lenses or the light shielding layers which is the distance adjusted for a vacuum from the actual distance in air.”

Applicants contend that Sumida discusses the relation between the display pixel pitch and lenticular array’s lenses pitch and the spacing of the lenticular array from the display panel, not any particular relationship pertaining to two lenticular arrays. Applicant’s request that the Examiner point to the relevant part of the stated passage that allegedly provides features of claims 16-17 and 22-23.

Applicants respectfully submit that the Examiner has not satisfied the *prima facie* requirement of showing, teaching, or suggesting all of the claimed limitations defined by dependent claims 16-17 and 22-23 for the reasons discussed above and since Sumida fails to suggest, teach, or show all of the elements of independent claims 9 and 19, from which claims 16-17 and 22-23 each depend, either directly or indirectly, missing from the Allio reference as discussed above.

In view of the above, Applicants respectfully request reconsideration and withdrawal of the outstanding rejection of claims 16-17 and 22-23 under 35 U.S.C § 103(a).

4. Rejection under 35 U.S.C. § 103 (a) based on Allio in view of Carter

Claims 6-7, 13-14, and 20 stand rejected under 35 U.S.C. § 103(a) as being unpatentable over Allio in view of Carter et al. (Patent No. 6,091,482). This rejection is respectfully traversed.

Applicant has already explained why *Allio* fails to teach or suggest the invention of independent claims 1, 9, and 19. Since claims 6-7, 13-14, and 20 each depend, either directly or indirectly, from claims 1, 9, and 19, claims 6-7, 13-14, and 20 are allowable at least for the reasons generally expressed above with respect to claims 1, 9, and 19 and since Carter fails to provide the elements missing from Allio.

In view of the above, Applicants respectfully request reconsideration and withdrawal of the outstanding rejection of claims 6-7, 13-14, and 20 under 35 U.S.C § 103(a).

Conclusion

In view of the above amendments and remarks, Applicants respectfully request reconsideration and withdrawal of the formal objections and rejections to the claims, and the rejections based on prior art. Because all claims are believed to define over prior art of record, Applicants respectfully request an early indication of allowability.

Pursuant to 37 C.F.R. §§ 1.17 and 1.136(a), Applicant(s) respectfully petition(s) for a two (2) month extension of time for filing a reply in connection with the present application, and the required fee of \$205.00 is attached hereto.

If the Examiner has any questions concerning this application, the Examiner is requested to contact the undersigned at (703) 205-8000 in the Washington, D.C. area.

If necessary, the Commissioner is hereby authorized in this, concurrent, and future replies, to charge payment or credit any overpayments to Deposit Account No. 02-2448 for any additional fees required under 37 C.F.R. §§1.16 or 1.17; particularly, extension of time fees.

Respectfully submitted,

BIRCH, STEWART, KOLASCH & BIRCH, LLP

By: 

Michael K. Mutter
Reg. No. 29,680

MKM/JPK/kmr

P.O. Box 747
Falls Church, VA 22040-0747
(703) 205-8000

MARKED UP VERSION TO SHOW CHANGES MADE

In the Claims:

Please amend the claims as follows:

1. (Amended) An autostereoscopic display supplying a viewer with a stereoscopic image when viewed from an intended perspective, comprising: a pixel array including individual pixels each having subpixel elements, N individual pixels being arranged into an individual pixel groups, wherein N is equal to the number of individual perspective images to be displayed, each said pixel including plural subpixels extending in a horizontal direction from the viewer's intended perspective and forming a part of an individual perspective image;

a first lenticular array positioned vertically from the viewer's intended perspective and focussing light from said subpixels of each said pixel to a single spatial point between said pixel array and the viewer; each said pixel group in the horizontal direction being focused by a different first lens of said first lenticular array; and

a second lenticular array positioned between said first lenticular array and the viewer such that images projected from different pixels of each pixel group are directed to a different location at an intended viewing point, the spacing of the images from each pixel of said pixel groups being separated at the intended viewing position at about the spacing between human eyes to thereby display said plural images stereoscopically.

9. An autostereoscopic display, comprising:
- a pixel array including several pixel groups;
 - a first lenticular array positioned between the pixel array and a viewer, said first lenticular array comprising a plurality of first lenses corresponding respectively to the pixels of the pixel array such that the lenses of said first lenticular array include a plurality of first lens groups corresponding to said pixel groups; and
 - a second lenticular array positioned between the first lenticular array and a viewer such that images projected from first lenses within each first lens group pass through a corresponding one of several lenses within the second lenticular array,
- wherein a pitch of lenses within the second lenticular array differs from a pitch of the first lens groups within the first lenticular array.

19. (Amended) A method of displaying multidimensional images on an autostereoscopic display, comprising:

generating images using a pixel array including several pixel groups;

projecting the images generated by each pixel through a corresponding plurality of first lenses of a first lenticular array, thereby projecting the images through several first lens groups; and

[further] projecting the images projected through each first lens group through a different and corresponding one of several second lenses within a second lenticular array that is positioned between the first lenticular array and a viewer, the further projecting involving projecting the images through second lenses having a pitch that differs from a pitch of the first lens groups within the first lenticular array.